Rocky Mountain National Park
Resources Rendezvous
May, 2003

Plows work to clear snow from Trail Ridge Road. The rotary plow in front works as a "pioneer" to make the first path through the snow. Then a second plow widens the cleared area, usually the width of the road, to allow the roadway to melt out.

TRAIL RIDGE ROAD SNOW PLOWING

By Katy Sykes, Assistant to the Superintendent

Trail Ridge Road, one of the great alpine highways in the United States, traverses the park for 48 miles and reaches an elevation of 12,183 feet. The highest continuous road in America, the road connects the towns of Estes Park on the east and Grand Lake on the west. The park does not plow the central portion of the road in the winter, but keeps it partially open to Many Parks Curve on the east side and the Colorado River Trailhead on the west side.

Plowing operations start in April. Of course, spring storms and squalls can bring snow to already plowed areas, causing plow operators to re-plow some areas, some years many times over. Last weekend, 14 foot high drifts blew back on the road in one area! According to Chuck Stalker, Acting Roads Foreman, plowed roads act like snow fences to accumulate blowing and drifting snows. Enthusiastic and dedicated plow operators work safely and take the storms in stride.

View from the plow at Rock Cut on May 7, 2003

Snow depths are encouraging after last year's drought. As of the first week of May, east side plow operators are to Rock Cut, where drifts are up to 22 feet deep, which is higher than the rotary plows! On the west side, plows are to Medicine Bow Curve. Drifts on the high side of Milner Pass were 8-9 feet.

The road is scheduled to open Memorial Day Weekend, weather permitting. It can close at any time due to weather or icy conditions from snowmelt freezing at night.

Chasm Lake Shelter before the avalanche

HISTORIC CHASM LAKE SHELTER CABIN IS HISTORY

From an interview with Jim Detterline, RMNP Longs Peak Ranger and Dr. Bill Butler, RMNP Archeologist

This spring a Himalayan-sized avalanche swept down Mt. Meeker and leveled the Chasm Lake Shelter Cabin, which was located in a small meadow below Chasm Lake. On April 9th, Dale Atkins from the Colorado Avalanche Information Center in Golden went up to

look at the site. He found the avalanche fracture line on the north face of Mt. Meeker between the Right Gully and the Loft. The 500' wide avalanche came down in a straight path to the cabin, but missed the nearby privy by only 20 feet.

Dale believes the avalanche occurred on Sunday, March 23rd. On March 22nd the wind shifted suddenly to the west and he believes the warm winds from the shift was the trigger. He described the avalanche as a soft slab avalanche containing a lot of powder snow because there were no blocks or hard chunks of snow in the debris. The avalanche sped down the mountain about ¼ mile to the cabin, and carried cabin debris another ¼ mile to Peacock Pool.

Park staff have made several trips to the site to assess the damage and search for about $30,000 (in today's dollars) worth of search and rescue (SAR) equipment which had been stored in the cabin. Staff found that the lower 1-2 feet of the cabin's north wall is all that is standing. Eight-inch thick timbers were broken like toothpicks. Jim Detterline found his T-shirt and socks in a metal storage box that he said, "was twisted like a candy cane." Staff also found a large 18-year-old plastic bottle of Wesson vegetable oil still intact on the floor of the cabin.


Park staff view SAR equipment and building debris after the avalanche

Early in April rangers were concerned that more avalanches could occur in the area. Jim saw two point-release avalanches near Columbine Falls and the falls are completely buried by avalanche snow. Rangers were also concerned that the SAR equipment would be scavenged and have been digging through the avalanche debris to search for items. They are asking that visitors leave what they find at the site.

The Chasm Lake Shelter Cabin was built in 1931 by the NPS. Through the years thousands of rescues were staged out of the cabin. On January 27, 1968, a man named Richard Kezlan tumbled down Lambs Slide and was critically injured. Dr. Sam Luce from Estes Park reached the cabin in 6 hours, performed brain surgery on Mr. Kezlan in the cabin and saved the man's life. In 1998, the cabin was determined eligible for the National Register of Historic Places and was included on the NPS list of classified structures. Discussions are ongoing at present to decide if the cabin will be rebuilt.

Another shelter cabin, the North Inlet Shelter Cabin on Hallett Creek, was destroyed by an avalanche in April, 1986.

EFFECTS OF THE DROUGHT ON ROCKY MOUNTAIN NATIONAL PARK – OBSERVATIONS AND ANECDOTES

From an interview with Terry Terrell, RMNP Research Administrator, who gathered the information from park staff and researchers


Mountain Ball Cactus, *Pediocactus simpsonii* var. *minor (Echinocactus simpsonii)*

The multi-year drought caught our attention in a big way last summer through raging wildfires and low reservoir levels. Many of us cleared defensible spaces around our homes (perhaps for the first time!), reduced water consumption or changed plans to avoid smoke, fire, or dry places. Some evacuated their homes temporarily during the Big Elk Fire. The drought affected the flow of our daily lives.

The daily lives of the park's wild inhabitants have also been affected, from the tiniest plants to the larger mammals. During the past year, ongoing research

projects and numerous observations by park staff, visitors, and researchers indicate some of the effects of the drought on park resources.

- **Wildflowers and seed production:** Most wildflowers didn't bloom as profusely last summer and alpine flowers bloomed about 2 weeks early. Seed production was poor. Drought-adapted species, however, such as mountain ball cactus, bloomed prolifically.
- **Exotic plants:** Exotic plants increased, probably because they could out-compete stressed native plants.
- **Evergreens:** Many more evergreens appeared dead than in past years. They also appeared to have less growth and dramatically increased the number of needles dropped in the autumn. These stressed evergreens are more susceptible to mountain pine beetle, which will further increase die-off.
- **Boreal Toads:** There was no toad reproduction in the park in 2002 and tadpoles that were introduced into park waters died.


River Otter, *Lutra canadensis*

- **River Otters:** Otters migrated out of the park because of inadequate stream flow. Because they can move back when stream flows improve, park staff does not expect a permanent impact unless the drought represents a new set of "average" conditions.
- **Greenback Cutthroat Trout:** Low water levels threatened the historic greenback population in Como Creek south of the park and Hunters Creek in Wild Basin. Park staff worked with Colorado Division of Wildlife to find an evacuation site in the park for the Como Creek population, although these fish were finally moved to another location. Staff monitored Hunters Creek water levels through the summer and planned to evacuate the fish to Sandbeach Lake which turned out not to be necessary.
- **Butterflies:** Butterflies were smaller in size and in numbers last summer, which is believed to be a reflection of smaller amounts of host plant biomass available for their caterpillars and fewer nectar plants for the adults. The population of arctic blue butterflies dropped to 1/3 of former levels because its host plant, rock jasmine, has declined over the past few years.
- **Migrating Elk:** Elk with park collars were spotted in the Masonville/Loveland area several weeks before the March blizzard and fewer elk were counted in the park during the March elk counts. Park biologists believe that many elk migrated to lower elevations because of the reduced forage in the park and Estes Valley. These migrants are facing a triple whammy – the energy expense of migrating 30 or more miles, arrival at an area that also has poor forage and lots of people, and crowding into a chronic wasting disease "hot spot" where the prevalence among mule deer is 12%. These elk may or may not return to their summer range in the park. If they do return, they could increase the prevalence of chronic wasting disease in the park if their poor condition and increased exposure resulted in contracting the disease. Some elk may stay at the lower elevations during the summer if food is plentiful. The long-term effects of the combination of drought, increased migration, disease, crowding, blizzard, and human impact are so complicated that scientists may never completely understand them.
- **Elk that stayed in the park:** The elk that stayed in the park and Estes Valley and were already weakened by low forage were then hit by the March blizzard and deprived of food for longer than a week in most cases. Some elk congregated on roads to avoid the deep snows and were chased by passing vehicles. Park biologists expect die-offs later in the spring as these animals are unable to recover from the weight loss and stress. Most die-offs typically occur in May as the grass begins to green up, because this new grass has very little nutrient value.
- **Mule Deer:** Mule deer have likely suffered because they cannot compete as successfully with elk for the reduced amounts of forage. Chronic wasting disease may increase due


Black Bear, *Ursus americanus*

to their stress and winter crowding during the blizzard.

- **Bears:** There have been more bear/human interactions over food in recent years. RMNP is thought to be marginal habitat for bears even during good years; the drought has furthered reduced available foods.
- **Glacial melt:** Reduced snowfall in recent years, combined with a warming climate, caused glaciers to lose years of accumulation from their surfaces. Last summer, blue spots – old, old ice – became exposed on some permanent snowfields and glaciers.

BEAR LAKE ROAD RECONSTRUCTION PROJECT

By Kyle Patterson, Management Specialist - Public Affairs

Bear Lake Road is one of the most popular scenic roads in Rocky Mountain National Park and provides year-round visitor access to a variety of recreational opportunities. Popular recreation sites along the road include Moraine Park and Glacier Basin campgrounds, the Sprague Lake picnic area and Glacier Creek Stables, Cub Lake, Bierstadt Lake, the Bear Lake trailheads, as well as numerous other hiking and horseback trails. The park maintains this road throughout the winter to support snowshoeing and cross-country skiing activities.

Bear Lake Road was constructed in 1928 when annual visitation to the park was about 250,000 people. Today, well over 3 million people visit the park each year. Approximately one million visitors travel along the Bear Lake Road Corridor annually, far exceeding the design capacity of this 75-year old route.

Bear Lake Road is showing its age! In some places the underlying structure of the road has weakened, resulting in potholes and other roadway damage that requires continuous repair. Drainage is also deficient in many locations, causing water to flow across the road, leading to treacherous spots during the winter. Two hairpin turns at the upper elevations of the road are too narrow to safely accommodate larger vehicles such as the shuttle bus and recreational vehicles.

Road improvements are needed to correct structural deficiencies in the roadway, provide a safe and pleasant driving experience, facilitate existing and future shuttle bus operations and improve inadequate parking and pullout design. Improvements will also facilitate maintenance and snow removal operations.

In September of 2001, Rocky Mountain National Park released an Environmental Assessment for improving Bear Lake Road. The preferred alternative was selected for implementation with some revisions. The project will reconstruct the existing road to a width of 22 feet between the Park & Ride (formally called the Visitor Transportation System [VTS] parking lot) and Bear Lake, by constructing two10-foot travel lanes and two 1-foot shoulders to improve safety and accommodate shuttle buses. Curve widening at the switchbacks will be done to allow shuttle buses to safely stay in their travel lane. The park will recommend that motor homes and vehicles pulling trailers not drive beyond the Park & Ride area.

Because of the public's concern about increasing parking spaces, there will be no net gain in parking capacity along the Bear Lake Road corridor past the Park & Ride area. The Bierstadt Lake and Glacier Gorge parking lots will be reconfigured. The Glacier Gorge parking lot will be moved to the east where the overflow parking lot is presently located. This will avoid the impact and cost of construction of a large retaining wall, minimize impact to natural resources (including a wetland) and will be safer for park visitors, who will no longer be required to cross Bear Lake Road on their way to and from the trailhead.

Bear Lake Road will be under construction during 2003 and 2004. All facilities along Bear Lake Road will be open and available to the public during the reconstruction project. From approximately June 1 to October 31, 2003 and May 1 to October 31, 2004, the road from Sprague Lake to Bear Lake will be accessible by shuttle bus ONLY.

Once construction begins, the Bear Lake Route shuttle, which makes the round trip between the Park & Ride and Bear Lake, will run from 5:00 a.m. to 10:00 p.m. every 30 minutes daily. The Moraine Park Route shuttle, which makes the round trip between the Park & Ride and the Fern Lake bus stop, will run from 7:00 a.m. to 7:00 p.m. every 20 minutes daily, then hourly until 10:00 p.m. The Moraine Park Route runs on schedule through September 7 and then weekends only for the remainder of September. It is important to note that the last bus leaves Bear Lake parking lot at 10:00 p.m. No emergency pick up will be available if a visitor does not make the last bus. The last bus leaves the Fern Lake bus stop at 10:00 p.m. The October schedule for both bus routes will be announced at a later date.

Visitors may drive to Glacier Creek Stables and Sprague Lake. However, there is no shuttle stop at Sprague Lake. Winter travel from November 1, 2003 through April 30, 2004 will be allowed for private vehicles to Bear Lake. The Sprague Lake Road may be closed during this time for bridge reconstruction.

The majority of the funding for the Bear Lake Road Reconstruction Project is from The Federal Highway Administration. Entrance fees retained by the park will also fund some aspects of the Reconstruction Project.

UPDATE ON NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE
From an interview with Larry Gamble, Chief of the Branch of Planning and Compliance

The National Environmental Policy Act (NEPA) was passed by Congress in 1969 and took effect on January 1, 1970 (Public Law 91-190, 42 USC 4321-4347). NEPA established a Council on Environmental Quality which promulgated NEPA regulations to which federal agencies must adhere. Section 102(2)(c) states that proposals for major federal actions significantly affecting the quality of the human environment must address:

- Environmental impacts of the proposed actions;
- Adverse environmental effects;
- Alternatives;
- Short term use of man's environment - and long term productivity;
- Irreversible and irretrievable commitments of resources.

Whenever Rocky Mountain National Park undertakes an action that has the potential to affect natural resources, cultural resources or the human environment, the park does an environmental analysis. For projects in which the environmental, cultural and social impacts are not expected to be significant and/or can be mitigated, the park will prepare an Environmental Assessment (EA). If the NPS Intermountain Regional Director concurs that the impacts are not significant, a Finding of No Significant Impact (FONSI) is signed. For projects with significant environmental, cultural or social impacts, an Environmental Impact Statement (EIS) will be initiated.

More information about current EAs and FONSIs can be found on the park's internet site: http://www.nps.gov/romo/planning/planningdocs.html.

Upcoming NEPA Compliance:

- Invasive Exotic Plant Management Plan and EA will be mailed for public review the week of May 12. Comments will be due on June 13.

- It is hoped that the Moraine Route Shuttle Bus Stops and Sprague Lake Road Bridge Replacement EA will be mailed the week of June 7 with public comments due in early July.
- Public Scoping on Greenback Cutthroat Trout restoration and Colorado River Cutthroat Trout reintroduction will be held this summer.
- It is hoped that Final Rulemaking to implement the snowmobile management decision will be completed by winter 2003-2004. This would limit snowmobile use in the park to the North Supply Creek Trail in the Colorado River District.
- The park is in the process of hiring a contractor to prepare an EIS for elk and vegetation management. A Notice of Intent will be published in the Federal Register within the next month.

Recently signed FONSIs:

- Hidden Valley Improvement Project. Visitor services and recreational facilities at Hidden Valley will be developed, including:
  - A 2,571 square foot building with bathrooms, a multi-purpose room, an office/search and rescue (SAR) cache, and a breezeway with interpretive panels;
  - A parking lot with 122 regular parking spaces and 5 bus/RV spaces; and
  - A 3,200 foot long trail system (400 feet paved and fully accessible) with 20 associated picnic sites (one site is a shelter with four tables).
- Wildland-Urban Interface Fuels Management Project. This allows the park to treat additional acres for hazard fuels. Seven treatment areas, totaling 3,670 acres, have been targeted for fuel reduction along the eastern border of the park: 189 acres in the Cow Creek area, 2,436 acres in the Deer Mountain area, 576 acres in the Eagle Cliff Mountain area, 192 acres in the Emerald Mountain area, 125 acres in the Lily Lake area, 25 acres in the area of the Longs Peak Ranger Station, and 127 acres in the Copeland Moraine area. The treatments would include an adaptive and integrated program of wildland fire suppression, mechanical thinning of vegetation, and prescribed fire in project areas as deemed appropriate given slope, aspect, vegetation type and structure, and proximity to developed areas and other sensitive sites.
- Relocation of the Gem Lake and Twin Owls Trailheads. The Twin Owls and Gem Lake trailheads will be combined and relocated. The new trailhead will be located at the east end of the MacGregor Ranch on property the park acquired from the ranch in 1983. A parking lot with space for 80 to 100 cars will be developed at the new trailhead.

CURRENT SNOWPACK AS OF APRIL 30 AT PARK SNOTEL SITES

From NRCS website

Lake Irene	98% of average	Bear Lake	119% of average
Phantom Valley	158% of average	Willow Park	92% of average
West Side total	**110% of average**	**East Side total**	**105% of average**

VISITATION STATISTICS FOR ROCKY MOUNTAIN NATIONAL PARK

Park Visitation in April, 2003, was 72,472. This was down (-8.36%) from April, 2002.
2003 year to date visitation (through April) was 292,283. This was down (-8.85%) from April, 2002.
RMNP's rank in relation to all units in the National Park Service is 21st in visitation.
RMNP's rank in relation to all other national parks in the NPS is 5th in visitation.

RESEARCH UPDATES


Bighorn Rams (*Ovis canadensis)*

❖ BIGHORN SHEEP POPULATION STUDY

From an interview with Terry Terrell, RMNP Research Administrator

A research team led by Gary White from CSU has captured and radio-collared 59 sheep out of their goal of 60 sheep (15 out of each of four park herds) in a study to look at bighorn populations and overall health. On April 2, the team was attempting to capture the last sheep for the study when their helicopter came down in a hard landing in the Neota Wilderness just outside the park. Fortunately the two crew members were not injured and were quickly rescued. The research team will not do any further sheep capture and will conduct the study with the 59 sheep.

The primary focus of the study is to look at sheep population numbers and demographics. This summer, ground crews will be hiking in the park to locate sheep bands. The study is a mark-resight study where researchers will identify individual collared sheep using radio telemetry and compare how frequently they see collared sheep with uncollared sheep to get population estimates for each band. Researchers will also be looking at the population structure – the make up of ages and sexes - of each band.

Of secondary importance to the study is looking at overall sheep health. During the capture, researchers collected blood samples and naso-pharyngeal throat swabs from each sheep. The park hasn't yet received reports on health findings. The research team will not do any other health-related monitoring during the study.

❖ ELK CONTRACEPTION STUDY UPDATES

From an interview with Therese Johnson, RMNP Management Biologist


Cow elk (*Cervus elaphus nelsoni*)

Last summer 34 cow elk were captured and collared for this study which is looking at the feasibility of using leuprolide as a wildlife contraceptive in free-ranging elk. Leuprolide was previously found to be effective in preventing pregnancy in captive elk. One of the key questions of the research is whether the contraceptive would alter the mating behavior of elk in the wild. Seventeen of the elk were injected with the contraceptive and the other seventeen are being studied as a control group.

During the fall and early winter researchers observed the behavior of the elk. The data are currently being analyzed but there appears to be no behavioral differences between elk treated with the contraceptive and untreated elk.

This spring biologists recaptured the elk to check them for pregnancy and for body condition. One of the 34 elk was killed by a hunter, one died of chronic wasting disease, two have not been captured and are in the Estes Park area, and two have not been found since they were collared last August.

Of the 29 elk that were recaptured:

- None of the treated elk tested positive for pregnancy.
- Most, but not all, of the control (untreated) elk were pregnant which is normal.

Preliminary results indicate the leuprolide appears to be effective at preventing pregnancy without affecting behavior in free-ranging elk.

❖ CHRONIC WASTING DISEASE SCREENING IN MULE DEER PROJECT UPDATES

from interviews with Mary Kay Watry, RMNP Biologist and Celine Pliessnig, RMNP Biological Science Technician

Park biologists began this project in January to screen the park's mule deer population for chronic wasting disease (CWD). Biologists are darting mule deer using wildlife pharmaceuticals, taking samples of tonsil tissue, and fitting deer with radio collars. The tonsil samples are sent to a lab where they are analyzed for CWD. The biologists then locate the deer again within a few days to assess that the animal is doing OK after the procedure. Currently, the park is in the pilot portion of this project and our biologists have been working with the NPS veterinarian on procedures, pharmaceutical dosages, and refinements. Twenty-four deer have been captured. So far all of the diagnostic samples submitted have been negative for CWD.

Park biologists have had many successful captures and there have been some complications, which have led to some refined procedures. For example, the darting protocols have been refined so that spring darting (when the animals are still in their thick winter coats) is only done when the air temperature is below 70° to prevent the animals' overheating. This fall the deer will be in their summer coats so the air temperature can be warmer before they may overheat. Biologists have also been using a new wildlife pharmaceutical. The dosages for both does and bucks have been refined and are working out well.

The spring darting season ends in April and the fall darting season will begin in mid-August and last throughout the winter.

AS BUTTERFLIES FLUTTER BY – The RMNP Butterfly Project

Source: Interview with Rich Bray, Volunteer Butterfly Researcher

Common Blue Butterfly

In 1995, Rich Bray proposed a butterfly monitoring project to develop baseline information for the park's butterfly species. Rich's concern about the extensive loss of habitat and air and water pollution that he was seeing in the East near his home in Maryland served as a catalyst. The Butterfly Project, originally designed to gather data for at least five years has been extended to ten years and will provide a baseline of relative butterfly population fluctuations so that future studies will have something to measure change against.

Rich expects changes in the park's butterfly populations due to many factors: climate change which may cause lower elevation species to occur at higher elevations; air pollution, acid precipitation, and nitrification which affect plant communities and will in turn affect butterfly populations; recent drought, which has impacted plants such as kinnikinnick and northern rock jasmine that are host plants for several butterfly caterpillars; lack of snow cover in recent years which makes wintering caterpillars, pupa, and eggs more susceptible to freezing and predation; and elk, who are stressing important butterfly host plants such as montane aspen, willow, native grasses, sulphur flower, and antelope bitterbrush.

The Butterfly Project started with the park list of 96 butterfly species that was developed by Dr. Paul Opler in 1996. Currently,137 species have been documented for the park. Seventy three of these species qualify as major park species, which means they have been seen 5 or more times while surveying a single transect.

Data is collected by walking 1-kilometer transects every week during a 20-week survey season which begins on May 1 and ends on September 17 each year. The surveyor records all butterflies seen within an imaginary box that is 5 meters wide, 5 meters high, and 5 meters deep in front of the surveyor as they walk. Originally, 33 transects were established though some have now been abandoned. The transects are located in the montane, subalpine, and alpine ecosystems. The surveyor also notes wind speed, temperature, and amount of sun and also notes butterflies seen off of the transect. This year, 23 volunteers helped with the project.

By the end of the study, the project will provide RMNP with an interpretive butterfly collection, a pictorial and descriptive guide of each species, a public handout showing flight periods of major species, and the compiled data.

Rich is also gathering weather data for the last several years from Estes Park and Grand Lake in order to compare temperatures with when butterflies emerge. Insects generally develop around a 50 degrees F threshold and can vary by species. Rich is interested in seeing if mountain butterflies may be able to develop at cooler temperatures.

Interesting Items of Note:

- In 1997, 40 butterflies were listed as major species (seen at least 5 times in a single transect); in 2002, 48 major species qualified.
- Last year 262 routes were done; each walk of a transect is called 1 route. Over 1400 routes have been done since the project started.
- Over 17,000 volunteer hours by numerous volunteers have been donated since the project began in 1995.
- The Painted Lady butterfly saw a huge increase in 2001; the data went from 0 – 3 sightings the years before to 482 sightings! In 2002, none were seen.
- One species, the Swale Satyr was rediscovered in the park based on a 1950s listing stating that it occurred at the Highway 36 entrance to the park. After some searching, researchers learned that the entrance was located in a different area south of Eagle Cliff Mountain in the 1950s. Searching in that area, volunteers found the colony of butterflies, still there 50 years later.
- Rich has a catch-and-release collecting permit in the park, which also allows collecting a butterfly or associated insect if it is a new species to the park or is not already in the interpretive butterfly collection.

Painted Lady Butterfly on a Waxflower (*Jamesia americana*) shrub

Rich is back for more butterfly work in the park this summer.

The more you come to know the national parks, the more the hidden assets begin to appear. You never come to the end of them. They are seldom the things the eye first sees; they are nearly never the things avowedly sought.
-Freeman Tilden

May 7, 2003, photo of Rock Cut from the snow plow courtesy of Chuck Stalker.
All other photos are courtesy of the National Park Service, Rocky Mountain National Park.